HIGH SCHOOL AND UNIVERSITY MATRICULATION EXAMINATIONS BOARD.

DEPARTMENTAL EXAMINATIONS, 1926

ALGEBRA 1.

Time—Three hours.

Values.

4 **1.** If one man has x dollars and another man has half as much, express in terms of x what they both have. If this amount is \$75.00, write and solve an equation that will find what each has.

x, $\frac{x}{2}$. \$50, 25

OR

4 Express the interest on x dollars at 6% for 3 years. If the interest is \$36.00, write and solve an equation that will find the value of x.

2. If $a = -1$, $b = 3$, $c = -2$ find the value of

3 (a) $-3a^4b\,c^3$. 72

3 (b) $-3a^4 + b - c^3$. 8

4 (c) Remove the brackets and express in descending powers of x:

$$2x\,(3x-2) - 5(x-3) + 6x\,(x-1) - 2(x^2-5x)$$

$10x^2 - 5x + 15$.

7 **3.** Add the sum of $2y - 3y^2$ and $1 - 5y^3$ to the remainder left when $1 - 2y^2 + y$ is subtracted from $5y^3$.

$y - y^2$
$= y(1 - y)$.

7 **4.** Simplify: $\dfrac{(a+2)\,(a+3) - (a-3)\,(a-2)}{10a}$ $= 1$.

7 **5.** The expression $44x^4 - 83x^3 - 74x^2 + 89x + 56$ is the product of two expressions of which $4x^2 - 5x - 7$ is one. Find the other.

$= 11x^2 - 7x - 8$.

[OVER]

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URR HIST

Values.

Either

7 **6.** Solve the equation:

$$\frac{2x}{3}+\frac{x+1}{4}-\frac{x-1}{2}=x-8.$$

$x = 15.$

2 Verify the solution.

Or

7 **7.** Solve the equation: $x(3x-1)=10$.

2 Verify.

5 **8.** Factor: $3x^2-19x-14$. $(3x+2)(x-7).$

5 **9.** Factor: $1-(m^2+n^2)-2mn$. $(1+m+n)(1-m-n$

5 **10.** Factor: $6x^2-2ax+3xy-ay$. $(3x-a)(2x+y).$

5 **11.** Factor: $24a^4-3ab^3$. $3a(2a-b)(4a^2+2ab+$

5 **12.** Factor: $4a^4+1$. $(2a^2+2a+1)(2a^2-2a+1)$

[illegible] **13.** [illegible]

$$3x+2-\frac{y+7}{11}=10.$$

$$2y+\frac{x+11}{7}=10.$$

$\left.\begin{array}{l}x = 3\\ y = 4\end{array}\right\}.$

2 Verify your solution.

14. Attempt two questions only:

10 (*a*) A workman can save \$200.00 a year. He goes to another town where his wages are 10% greater and his expenses are 5% less, and he can save \$310.00 a year. What are his wages now?

~~[illegible]~~

\$880

10 (*b*) A man has two farms rented at \$5 per acre and the total rent is \$1,100.00. When the rent of the first is reduced 20% and the second is increased 20%, the total rent is \$1,120.00. How many acres are there in each?

$\left.\begin{array}{l}100\\ 120\end{array}\right\}$

10 (*c*) If I walk m miles at 4 miles per hour and $m+2$ miles at 3 miles per hour, the journey will take 15 minutes longer than if I walked at the uniform rate of 3½ miles per hour. Find the length of the journey.

28 mil

100